EXPLAINED INFERTILITY AMONG THE COUPLE ATTENDING THE INFERTILITY UNIT OF BANGABANDHU SHEIKH MUJIB MEDICAL UNIVERSITY (BSMMU), BANGLADESH

SULTANA A[1], TANIRA S[2], ADHIKARY S[3], KEYA KA[4], AKHTER S[5]

Abstract:

Context: *The causes of infertility vary from country to country among different cultural, environmental and socio economic groups. The aim of the study was to explain the causes of infertility among the couple attending infertility unit of Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh and to compare with previous studies of both local and abroad.*

Methods: *This cross sectional study was carried out between September 2007 and March 2008 at infertility unit of BSMMU Hospital, Dhaka, among 110 couples, who had tried unsuccessfully for more than one year to reproduce. The data included history, physical examination and relevant investigations for female partners and male partners.*

Results: *The age group of 25-30 years was the most vulnerable as they represented 52% of primary and 51.42% of secondary infertility. Among the 110 subfertile couples, 43.63% had female factor problems; 20% were suffering from male factor problems. In 21.81% of cases both male and female were responsible. In 14.54% cases, there were no causes, and, therefore, remain unexplained infertility. Among women, primary subfertility was 68.18%, secondary subfertility was 31.81% and among men, it was 79% and 21% respectively. Most of the infertile couples (43.64%) were trying for 2-5 years. In this study, most common cause was ovarian dysfunction (33.63%). Among them, anovulation with regular menstruation was found in 60%, polycystic ovarian disease in 32%, hyperprolactinaemia in 16% cases. Bilateral tubal occlusion was found in 8% and pelvic adhesions in 24% by doing laparoscopy. In addition, 10% of patients had endometriosis. Fibroid uterus was found in 26% cases. Among the primary subfertility cases, common causes were anovulation with regular menstruation (14.66%) and polycystic ovarian disease (12%). 40% of secondary subfertility was related with menstrual regulation (MR). Among male factors, azoospermia was found in 6.36% cases, oligozoospermia in 10.9% cases, asthenozoospermia 18.18%, teratozoospermia was in 6.36% cases.*

Conclusion: *Primary subfertility cases were more common than secondary subfertility cases. Ovarian dysfunction was the common causes of subfertility. Other factors were abnormal semen analysis, endometriosis, tubal occlusion, pelvic adhesions and fibroid uterus.*

Key Words: *Infertility, subfertility, eligible couple.*

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Introduction:

Infertility is defined as inability of an eligible couple to conceive within one year of unprotected coitus[1]. Now-a-days, it is common practice to begin the investigations of a couple when one year has elapsed without contraception in spite of normal coitus, especially if the woman is aged over 30 years or the man is aged over 40 years[1,2]. Approximately 10-15% of marriages prove to be as childless[2,3]. Infertility classified as primary infertility applies to those who have never conceived, and secondary infertility designates those who have conceived at some time in the past[2].

World Health Organization (WHO) has estimated that one in every four eligible

1. Dr. Arifa Sultana, Senior Registrar, Department of Obstetrics & Gynaecology, Apollo Hospitals, Dhaka.
2. Dr. Shaorin Tanira, Assistant Director (Health), MCH-FP Clinic, Manabik Shahajya Sangstha (MSS), Dhaka.
3. Dr. Sanchita Adhikary, Junior Consultant, Department of Obstetrics & Gynaecology, Jessore Sadar Hospital, Jessore.
4. Dr. Kashfia Ahmed Keya, Medical Officer, Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.
5. Prof. Sayeba Akhter, Professor, Department of Obstetrics & Gynaecology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka.

For correspondence: Dr. Arifa Sultana, Senior Registrar, Department of Obstetrics & Gynaecology, Apollo Hospitals, Dhaka. Cell Phone:+8801718515436.

couples in developing countries had been found to be affected by infertility, when an evaluation of responses from women in Demographic and Health Surveys from 1990 was completed in collaboration with WHO in 2004[4]. Infertility is a global health issue, affecting approximately 8-10% of couple worldwide[5]. It was estimated that the rates of infertility in South Asia, as 4% in Bangladesh, 6% in Nepal, 5% in Pakistan and 4% in Sri Lanka[6]. The causes of infertility vary from country to country and in the different cultural, environmental and socio-economic groups[7]. For an example, hypothalamic -pituitary-ovarian axis disorders with anovulation are the commonest causal factors of infertility in Kuwait[8]. On the other hand, tubal factor infertility related to infection is more common in Africa, South America and India[8].

Though the cause of infertility depends upon either husband or wife or both, sometimes wife alone is blamed in our society. In infertile couple, the aetiological factor lies in the female in about 40% of cases and in 35% cause lies in male. About 10 to 20% of cases both husband and wife are responsible for infertility and rests are unexplained[9]. Unexplained infertility is a term applied to a subfertile couple whose standard investigations yield normal results[1]. The present study is aimed to determine the explained causes of infertility among patients attending an infertility unit of a tertiary level hospital setting which may help to get some baseline data to establish the probable cause of infertility in our country through further research.

Methods:

A cross-sectional study was done in the Bangabandhu Sheikh Mujib Medical University (BSMMU) Hospital, Dhaka, between September 2007 and March 2008, on 110 infertile couple who tried unsuccessfully for more than one year, and attended BSMMU Infertility Unit for treatment. Patients were selected on the basis of following inclusion and exclusion criteria.

Inclusion criteria:

1. Infertile couples with primary or secondary infertility;
2. Patients having regular / irregular menstrual cycle;
3. Age ranging from 18- 40 years.

Exclusion criteria:

1. When husband living in abroad;
2. Trying for conception less than one year;
3. Age more than 40 years and less than 18 years for female partners.

Sample size was estimated from target population. The evaluation protocol included age, marriage duration, menstrual history, pregnancy, contraceptive and sexual history, childhood illness like mumps-orchitis and trauma to the testis. Social habits like cigarette smoking and alcohol consumption were noted. On physical examination, hirsutism, weight and height were documented for computing the body mass index (BMI). Laboratory evaluation protocol included base line investigations for all female partners, hormonal assay (FSH, LH, Prolactin, TSH, Testosterone) in case of irregular menstruating women on any day of the cycle, serum progesterone level on the 21st day of menstrual cycle in case of regular menstruating women, and semen analysis in case of male patients. After selection of couples, written informed consent was taken, detailed history was noted down. Then physical examination and investigations were done for both female and male partners as per protocol. Tubal evaluation was done with hystero-salpingography or diagnostic laparoscopy or dye test in those female patients whose primary investigations were normal and had already been treated with ovulation induction drugs but conception was failed some for tubal, peritoneal and uterine factors.

Data collected from the couples were recorded on a pre-designed data collection sheet for each patient. Collected data were compiled and presented in tables.

Results:

The age group of 25-30 years was the most vulnerable as they represented 52% of primary and 51.42% of secondary infertility (table-I). Among the 110 subfertile couples, 43.63% had female factor problems; 20% were suffering from male factor problems. In 21.81% of cases both male and female were responsible. In 14.54% cases, there were no causes, and, therefore, remain unexplained infertility

(table-II). Among women, primary subfertility was 68.18%, secondary subfertility was 31.81% and among men, it was 79% and 21% respectively (table-III). Most of the infertile couples (43.64%) were trying for 2-5 years (table-IV). In this study, among women, most common cause was ovarian dysfunction (33.63%). Among them, anovulation with regular menstruation was found in 60%, polycystic ovarian disease in 32%, hyperprolactinaemia in 16% cases. Bilateral tubal occlusion was found in 8% and pelvic adhesions in 24% by doing laparoscopy. In addition, 10% of patients had endometriosis. Fibroid uterus was found in 26% cases. Among the primary subfertility cases, common causes were anovulation with regular menstruation (14.66%) and polycystic ovarian disease (12%). 40% of secondary subfertility was related with menstrual regulation (MR). Among 110 male partners, normal semen analyses were found in 64 (58.18%) and the remaining 46 (41.81%) had abnormal seminal parameters e.g. azoospermia in 07 (6.36%). oligozoospermia in 12 (10.9%) and 16 patients had asthenozoospermia in 16 (14.54%) and teratozoospermia in 11 (10%).

The results are shown in the following tables and figures:

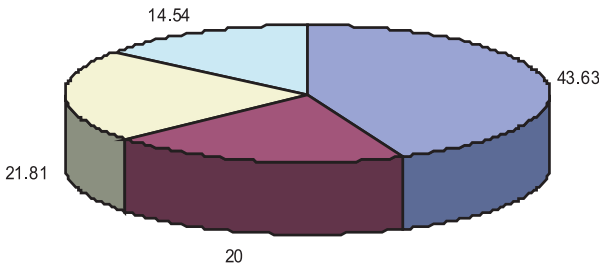

Fig. 1 : *Pie diagram showing causal incidence of infertility in female and male (in percentage).*

Table-I

Incidence of infertility with age distribution

Age group (years)	Primary infertility (n=75)		Secondary infertility (n=35)	
	Frequency	Percentage	Frequency	Percentage
18-24	18	24	5	14.28
25-30	39	52	18	51.42
31-35	12	16	9	25.71
36-40	6	8	3	8.57

Table-II

Types of infertility among female and male partners

Type of infertility		Number of patient	Percentage
Primary	Female	75	68.18
	Male	87	79
Secondary	Female	35	31.81
	Male	23	21

Table-III

Duration of infertility (reported to infertility unit in years after marriage)

Duration(in years)	Number of patients	Percentage
1-2	28	25.45
2-5	48	43.64
5-10	22	20.00
>10	12	10.90

Table-IV

Causes of primary infertility in female (n=75)

Condition		Number of patients	Percentage
Anovulation with regular menstruation		11	14.66
Polycystic ovary		9	12
Surgicalinterference	Myomectomy	3	8
	Cystectomy	2	
	Ovarian drilling	1	
D&C		3	4
Normal		46	61.33

Table-V

Obstetric history of secondary infertility group (n=35)

Obstetric History	Number of patients	Percentage
Still birth	01	2.85
Spontaneous abortion	10	28.57
Menstrual regulation	14	40
Ectopic Pregnancy	02	5.71
Vaginal delivery	05	14.28
Caesarean section	03	8.57

Table-VI

Hormone assay

Hormones		Number of patients	Percentage
LH **:** FSH (n=25)	Altered	9	36
	Normal	16	64
Serum prolactin (n=25)	Raised	4	16
	Normal	21	84
Serum testosterone (n=12)	Raised	2	16.7
	Normal	10	83.3
Serum progesterone (n=28)	Altered	11	39.3
	Normal	17	60.7
Serum TSH (n=25)	Normal	25	100

Table-VII

Past medical and surgical history of female (n=110)

Past illness	Number of patients	Percentage
Puerperial sepsis**/** Post abortal infection	6	5.45
Diabetes Mellitus	7	6.36
Tuberculosis	3	2.27
Hypertension	6	5.54
Hypothyroidism	4	3.63
Pelvic Inflammatory Disease	16	14.54
Dilatation & curettage	8	7.27
Surgical interference	12	10.90
None	48	43.63

Table–VIII

History of past illness of male (n=110)

Past illness	Number of patients	Percentage
Varicocele	2	1.81
Chicken pox	5	4.54
Diabetes Mellitus	5	4.54
Hypertension	7	6.36
Hypothyroidism	2	1.81

Discussion:

Fertility is affected by many different cultural, environmental and socioeconomic factors[7,10]. In the present study, rates of primary infertility were found much higher than that of secondary infertility, unlike evidences from previous studies[11-13]. For example, overall prevalence of infertility in a rural Nigerian community reported 9.2% for primary infertility and 21.1% for secondary infertility[12] and in Gabon 5.7% for primary infertility and 20.0% for secondary infertility[13]. However, studies showed that 51.4% **of the** total had primary **infertility in UK[14],** while 82.48% were primarily and 17.52% secondarily infertile in South India[9], **which support our results.**

In this study, the primary infertility was found 68.18% and secondary infertility 31.81% in females where as in males, primary infertility was 79% and secondary infertility 21%. The results of the previous local studies are more or less similar to ours[15,16]. In the southern part of India, a study showed the incidence of female infertility 45.67% and male infertility 54.33%, while 82.48% were primarily and 17.52% secondarily infertile[9]. In Mazandaran province of Iran, a study revealed that 50.5% of total infertility cases were due to male factors[17], while it accounted for infertility in 40.2% of the couples in Kuwait[8]. A study conducted in the western part of Siberia found that male factors were responsible for infertility in 6.4%, and female factors were responsible in 52.7% of couples[18].

Infertility is an age-dependent disorder, possibly resulting from the ageing process in reproductive organs and endocrine function. Of the sociodemographic data analyzed, age most strongly correlated with the likelihood of infertility. Age distribution of population showed in primary subfertility 52% were below 30 years, while in secondary infertility, about 51% were below 30 years, which is similar to the findings of previous studies[9,15,16]. However, in UK, 26.9% of infertile couples were over 35 years[14].

The present study demonstrated ovarian dysfunction as the most common cause in female infertility of which anovulatory menstrual cycle (60%) topped the list. Anovulation is also a common factor in Kuwait (25%)[8] and Iran (28.8%)[17]. Our study found women with bilateral tubal occlusion (8%) and pelvic adhesions (24%), for many women in developing countries especially in Sub-Saharan African countries suffer infertility resulting from untreated PID, a sequel of a STI or other reproductive tract infection[3,19]. A study done in Bangladesh showed tubal occlusion in 40.24% cases[16], while other studies done in southeastern Nigeria showed 49% bilateral tubal obstruction[19] and 14.8% in Mazandaran province of Iran[17]; however, all results are much higher than this study. In the present study, polycystic ovarian syndrome was detected in 32% cases. Previous local studies showed lower prevalence[15,16]. However, its rate is much higher in Kuwait (52.9%)[8]. Again, endometriosis was found in 10% cases, as nearly found in other local studies[15,16]; however, much lower in Mongolia (4.2%)[20]. Although endometriosis is associated with infertility, a clear causal relationship is yet to be established unless adhesive disease is found[2].

Male infertility was an important issue among our patients which was mainly considered on the basis of semen parameters; azoospermia oligozoospermia, asthenozoospermia, teratozoospermia as showed similar findings in earlier studies[16,17,19,21], which are more or less in agreement with the results of the present study. In this study, history of illness in males include varicocele, chicken pox, diabetes mellitus, hypertension, hypo-thyroidism etc. Except varicocele (2.17%), most of them had no association with semen

abnormality. A study done in the southeastern part of Nigeria showed history of varicocele and cryptorchidism as associated health problems in infertile males[19], which is in agreement with our study. However, in the last five decades, possible declining in sperm quality and deterioration of male reproductive health have resulted wide scientific and public attention[22]. It may be mentioned that industrialization, environmental pollution, use of chemicals and repeated exposure to hazardous materials adversely affected reproductive health[23].

In our study, 43.63% patients came with history of infertility within 5 years of their marriage, where as 30% came within 10 years. Relatively delayed attendance of subfertile couples to the infertility clinic was found in developing countries[9,10,19]. Delayed treatment-seeking behaviour of infertile couples might be related to insufficient coverage and lack of specialized skills and laboratory facilities in the health services, and ineffective referral. However, one of the most significant determinants of delayed treatment seeking in developing countries seems to be poor public knowledge about infertility[9,10,21].

Although infertility is recognized as a widespread health problem, some controversies exist regarding the prevalence of infertility among different regions and countries. They may attribute to differences in access to health care facilities, and socioeconomic, cultural and racial variations[10,14].

However, in social context, childlessness was found to result in perceived role failure, with social and emotional consequences for both men and women, and often resulted in social stigmatization of the couple, particularly of the woman[16,19,24]. Infertility places women at risk of social and familial displacement, and women clearly bear the greatest burden of infertility[19,24]. Successful programmes for dealing with infertility in Bangladesh need to include both appropriate and effective sources of treatment at community level and community-based interventions to demystify the causes of infertility, so that people know why infertility occurs in both men and women and and where best to seek care[24].

Limitation of the study:

It might be included in limitation of the study. The male partner of infertile couple was usually reluctant to visit the infertility clinic. Another limitation was that the male partner was selected on the basis of history and semen analysis and no physical examination was done. Studies with larger samples and longer duration are recommended to assess the accurate picture of developing countries.

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